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The Context of Disorder: How the Physical Environment Affects Judgments of Police-Citizen Interactions

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The Context of Disorder: How the Physical Environment Affects Judgments of Police-Citizen Interactions

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Table of Contents

The Context of Disorder:

How the Physical Environment Affects Judgments of Police-Citizen Interactions

Instances of police shootings, police brutality, and other forms of police misconduct seem omnipresent in the news media, as cries for the prosecution of officers who violate the rule of law while on the job become all the more common. The Washington Post reports that 963 people were shot and killed by police in 2016 ("Fatal Force," 2016), while the National Law Enforcement Officers Memorial Fund reports that over 140 police officers were killed in the line of duty that same year ("Preliminary 2017 Law Enforcement Officer Fatalities", 2017). As the public demands answers to misconduct accusations, as well as for both police and citizen deaths, the need for objective evidence from which to interpret these events and accusations is indisputable.

Often, when faced with the reality of police-citizen conflict, the use of body-worn cameras and police cruiser dashboard cameras is proposed as a solution (Ariel, Farrar, & Sutherland, 2015). Arguments in favor of implementing body-worn cameras include their predicted potential to reduce police use-of-force and complaints against officers, enhance police legitimacy and transparency, increase prosecution rates for both police and citizens, and improve evidence obtained by police (Ariel et al., 2015). The increased prevalence of body-worn camera footage positions these recordings at the center of criminal trials; visual evidence has become available for use as ostensibly objective information from which jurors can understand how the events in question unfolded from the police officer's point of view. Body-worn camera footage may seem like a source of objective, tangible evidence, a necessity to assign culpability to a particular actor in the scene. Is it possible, however, that not all viewers are seeing the video footage through the same lens?

This question lies at the intersection of visual and social perception. Similar questions are being addressed in an emergent field of social psychology called social vision (Albohn & Adams, 2016; Adams, Albohn, & Kverga, 2017; Balcetis & Lassiter, 2010; Granot et al., 2015). Research in social vision takes the perspective that our perception of events is biased by our own motives and expectations, rather than derived purely from objective, visual facts. Social vision invites a new look at perception by focusing on the interplay between visual and social processes.

Social psychologists' interest in the biased perception of events is not new, however; Hastorf and Cantril (1954) noted an instance of biased event perceptions in the case of a Dartmouth vs. Princeton football game which was met with radically different perceptions from either side. Upon showing students from both universities a video tape of the particularly rough and penalty-laden game, they found differences in how students from either school were viewing the game. Despite viewing the same video footage, the number of infractions students perceived and their judgements of purpose and severity of the infractions differed as a function of which university they attended. The authors argued that these differences, while clearly the result of viewing the same event, "gave rise to difference experiences in different people" (Hastorf & Cantril, 1954, p.132). Research in social vision draws from these findings by not only highlighting where these differences in visual perception occur, but contributes a novel perspective by shifting focus to the *causes* of these differences in perception.

The current research addresses this focus in the context of police-citizen interactions. Arguments that cite body and dashboard camera footage as objective evidence for interpreting policing behavior disregard what both research in social vision and examples within the United States' criminal justice system have shown: viewers cannot always come to a consensus on how

to interpret the same exact visual evidence of police-citizen altercations (Granot et al., 2014; Kahan, Hoffman, & Braman, 2009). The Supreme Court case of Scott v. Harris (2007) dealt with this issue directly. Video footage was given to a group of jurors to determine whether or not Officer Timothy Scott was justified in running citizen Victor Harris off the road during a police chase, which left Harris paralyzed. Jurors were tasked with determining if Officer Scott's actions were justified, which would be the case only if Harris' driving posed a serious threat to the general public. A majority of jurors took the side of Scott, determining that Harris behaved recklessly during the pursuit and that Scott was justified in his decision to run Harris off the road. One juror, however, dissented in favor of Harris, stating that in the same video viewed by the other jurors, he saw Harris using turn signals and slowing at intersections and believed that Harris did not pose a strong enough risk to warrant being run off the road (Kahan et al., 2009).

Kahan and colleagues (2009) sought to replicate the dissent of this one judge by showing a diverse, online sample of approximately 1350 adults the same video that the Supreme Court used to assign culpability in the Scott v. Harris case. They found much of the same: viewers came to contrasting conclusions about whether Scott was justified in using deadly force in the chase. They found reliable differences in who amongst their sample agreed with the court's decision; specifically, Whites, Republicans, Conservatives, Hierarchs (those who believe in the reinforcement of social hierarchy), and Individualists were most likely to side with Officer Scott.

Thus far, researchers have addressed many individual factors with potential to bias how viewers make decisions about culpability and assign appropriate punishment when viewing police-civilian altercations, including viewers' identification with the police (Granot, Balcetis, Schneider, & Tyler, 2014), viewers' racial and ethnic identity (Kahan, Hoffman, & Braman, 2009), and the amount of information viewers possess about the situation (Jones, Crozier, &

Strange, 2017). Granot et al. (2014) proposed that viewers' prior identification with police officers and their patterns of visual attention would interact to affect their punishment decisions and beliefs about culpability in a physical altercation between a police officer and a civilian. In a series of experiments, they found support for their *attention divides* hypothesis, demonstrating that focusing visual attention on a common target (police or civilian) can exaggerate biases in punishment decisions among individuals who vary in their self-identification with police. Visual attention moderated the effect of viewers' social identification on punishment decisions: participants who were instructed to focus primarily on a police officer in a police-civilian altercation assigned punishment to the police officer only if they reported weak identification with police. Those who were instructed to focus on the civilian did not assign culpability or punish the officer differently as a function of identification with police. The researchers were able to replicate this finding by assigning participants to one of two novel social groups, where upon watching an altercation between two people belonging to these groups, those who were weakly identified with their out-group were most likely to assign punishment to said out-group than those with stronger identification with their out-group. Judgments of the same interaction differed as a function of perceived identification with either actor, and these interpretations could be experimentally manipulated or subject to change according to viewers' patterns of visual attention to the scene.

The Perceptual Link Between Disorder and Crime

While prior research has demonstrated that social identification and visual attention can account for some discrepancies between viewers of police-citizen altercations, what else might be affecting how viewers make judgments about this visual evidence? The current research explored whether the visual information about the *environment* in which the interaction occurs

has an effect on how viewers of police-citizen interactions make judgments about the nature of the interaction. More specifically, the present study sought to determine if judgments about police-citizen interactions differ as a function of the presence or absence of visually perceived physical disorder in the environment.

Theories of criminology have suggested that the prevalence of community-level physical disorder directly influences the prevalence of criminal behavior, one of the most prominent theories being Broken Windows Theory (Wilson & Kelling, 1982). Broken Windows Theory proposes that community-level disorder and petty crimes coincide with and contribute to serious criminal behavior, and thus by policing petty crimes that cause community-level disorder, the overall climate of crime in the community will improve. Broken Windows Theory assumes that certain crimes, specifically graffiti, litter, and broken windows, act as "signal crimes" to alert the community of danger (Innes & Fielding, 2002). The concept of signal crimes suggests that people associate certain physical environments and cues to disorder with crime, in order to ascertain the danger or likelihood of criminal behavior occurring within the environment.

Researchers have also argued that "physical incivilities" like litter, vandalism, vacant or dilapidated housing, abandoned cars, and unkempt lots symbolize, for residents and visitors alike, a breakdown in formal and informal social controls (Perkins & Taylor, 1996). Through perception of incivilities, a perceived decrease in formal social control is said to result in higher fear of crime among residents (Perkins & Taylor, 1996; Sampson & Raudenbush, 2004; Hipp, 2010), affect health outcomes (Ross & Mirowsky, 2001), and diminish confidence in the local law enforcement's ability to police the physically-disordered neighborhood (Skogan, 1990). Experimental research has further shown that when people perceive various forms physical disorder in their environment, this perception affects other behaviors and attitudes relating to

crime, including the likelihood of performing a rule-breaking behavior (Kotabe, Kardan, & Berman, 2016) and perceptions of out-group threat (Schaller, Park, & Mueller, 2003).

In a community-level investigation of fifty neighborhoods in Baltimore, Perkins and Taylor (1996) found that both physical and social disorder, a measurement determined by on-site, community-level observations, were related to the community residents' fear of crime at both the individual- and aggregated block-level. Trained raters measured the *observed disorder* in each neighborhood using the Block Environmental Inventory (Perkins et al., 1992), and surveyed a sample of residents on their perceptions of the quality of the surrounding social and physical environment, the residents' social support resources, their responses to crime and victimization, and their fear of crime. The Block Environmental Inventory had raters report visually perceived cues of both physical and social disorder, including the number of adults and children outdoors at a given time, number of abandoned cars, damaged or graffiti-painted public property, litter, vandalism, lack of exterior maintenance of non-residential buildings types, amount of open land use and whether that land is poorly maintained. Rater-generated measures of both social and physical disorder predicted community residents' fear of crime, cross-sectionally and one year later, with non-residential physical disorder predicting residents' fear of crime slightly more than social or residential disorder. The authors suggested that litter, graffiti, and dilapidation may be more likely to induce fear of crime than would social disorder, due to the higher frequency in which community members are exposed to physical disorder rather than social disorder. Perceivers of physical disorder may be determining the safety and likelihood of crime occurring through their perception of "signal crimes" like graffiti and broken windows, and this study provides evidence that community-members' symbolic understanding of these crimes is shared with other members of their neighborhood block. If perceptions of disorder are

in fact shared among community members, perceivers of environmental disorder may also make related judgments (ie., about interactions occurring within the environment) as a function of this shared symbolic understanding of physically-disordered environments.

Current Study

As visual evidence of police-citizen altercations becomes more readily-available, we should have a fuller understanding of how visual information affects viewers' judgments about these altercations. Prior research and theorizing suggests that perceivers make the link between disordered environments and criminal behavior at some level (Hipp, 2010; Innes & Fielding, 2002; Kotabe et al., 2016; Perkins & Taylor, 1996; Ross & Mirowsky, 2001; Sampson & Raudenbush, 2004; Schaller et al., 2003; Skogan, 1990; Wilson & Kelling, 1982), however the link between visual perception of physical disorder and its implications for judgments of police-citizen behavior occurring within the environment is relatively unexplored. The purpose of this study was to examine the link between the presence of physical disorder in an environment and viewers' judgments of police-citizen interactions. Assuming the proposed pathway of Broken Windows Theory (Wilson & Kelling, 1982), which suggests that the presence of disorder in an environment affects subsequent fear of crime and encourages criminal behavior within, I developed a study to explore whether the presence of visually perceived disorder in an environment would affect judgments about an interaction between a police officer and a citizen.

Overall, I predicted that when viewing a set of photos portraying police-citizen interactions, judgments on the nature of these interactions would depend on the presence or absence of visually perceived physical disorder cues within the environment: graffiti, litter, broken glass and windows, damaged or vandalized public property, poorly-maintained open areas, or lack thereof. I specifically tested the following hypotheses:

Hypothesis 1. Police-citizen interactions will be judged by perceivers as more negative if occurring in environments which contain visual disorder than in environments that are absent of visual disorder.

Hypothesis 2 and Hypothesis 3. The presence of disorder in environment will affect judgments about either or both actors (police officer or citizen), such that perceivers' judgments about aggression (Hypothesis 2) and threat (Hypothesis 3) will be stronger than if the environment is orderly. I had no predictions regarding whether these judgments would be primarily directed toward one actor. I anticipated a main effect of environment, but believed it equally plausible that such effects might be moderated by actor in some way.

In addition, two secondary hypotheses were tested, the direction of which should be contingent on the effects found in testing Hypothesis 2 and 3:

Hypothesis 4. Environment condition will affect judgments about which actor, either the police officer or the citizen, initiated physical contact. Although I believed disorder would polarize perceptions of initiation relative to the order condition, I had no hypothesis regarding which actor would be seen as more causal: the direction of such an effect should be consistent with any effects involving actors when testing Hypothesis 2 and 3.

Hypothesis 5. The presence of visible disorder will affect judgments about which actor was in control of the situation. My predictions were identical to that of Hypothesis 4: if one actor is seen as inherently more aggressive or threatening than the other under conditions of disorder rather than order, then disorder will also intensify perceptions of that actor being in control.

Considering prior research finding that judgments about police-citizen altercations can depend on individual factors including identification with police (Granot et al., 2014) and racial identification (Kahan et al., 2009), I anticipated that judgments made in this study might differ as

a function of viewers' prior identification. Thus, a secondary goal of this study was to explore one assertion of the field of social vision, that visual perception is filtered through perceivers' prior expectations. Individual differences in identification were included as a covariate for judgments about police-citizen interactions, testing the hypothesis that disparate judgments about police-citizen interactions are, in part, a product of how individuals use visual information present in the environment to form their judgments as a function of their prior-held identities.

By manipulating the presence or absence of physical disorder visible in an environment, this study explored if viewers of police-citizen interactions use visual information about physical disorder in an environment in order to interpret the behavior occurring within. Using a within-subjects paradigm, participants reported their judgments about police-citizen interactions occurring within both environments with and without visible signs of disorder. The primary purpose of the study was to understand if visual cues present in an environment could influence judgments about potentially-criminal behavior. Because the nature of such cues was a critical factor in testing these hypotheses, a pilot study was first conducted to develop the crucial ordered and disordered stimulus backgrounds.

Pilot Study

A pilot study was conducted to develop the stimuli for the primary study, specifically to gather a set of environments which would be reliably perceived as containing visual cues of physical disorder. Twenty-one backgrounds were included in the pilot test (see Appendix A), chosen with the intention of using a subset of these backgrounds for the primary study. All backgrounds were found and chosen through an online photo search engine. All photos were shown to participants in random order, on-screen at a size of 800 x 600 pixels. A sample of undergraduate students (n = 28) were recruited through the University of Connecticut participant pool and participated in this study online through Qualtrics Survey Software (Qualtrics, Provo,

UT) in exchange for partial course credit. No demographic information was collected from participants in this study. I validated that all responses included in the pilot study analyses were completed on a desktop computer. An instruction page told participants that they would be shown photos of a variety of physical environments and would be asked to report their perception of each environment.

A set of twenty-one photos were shown on-screen, one-at-a-time. Participants responded to the following items on 7-point scales while viewing each photo on the screen (see Appendix B): "How likely is it that serious crime occurs in this environment?" from 1 (*Very Unlikely*) to 7 (*Very Likely*); "How *disorderly* is this environment?" from 1 (*Very Orderly*) to 7 (*Very Disorderly*); "How *tidy* is this environment?" from 1 (*Very Untidy*) to 7 (*Very Tidy*); and "How *organized* is this environment?" from 1 (*Very Unorganized*) to 7 (*Very Organized*). Phrases shown here as italicized were also italicized in the study. Higher scores indicated greater likelihood of serious crime occurring, greater perception of disorder, tidiness, and organization. Means were calculated for each photo on each of the scaled measures. For exploratory purposes, I also calculated the Pearson correlation coefficient for participants' ratings of disorder and of the perceived likelihood of serious crime occurring, to obtain preliminary evidence for my primary hypotheses that ratings of environmental disorder would be associated with perceived likelihood of serious crime to occur in the environment. Means and correlations for each photo can be found in Table 1.

Participants also responded to the following open-ended items which were used for exploratory purposes and to further decide which backgrounds to use in the primary study: "Is this type of environment familiar to you?"; "Describe the kind of person you might find in this environment (living, hanging out)."; "List five things that you would say if you were describing

this environment to someone else."; and "What about the environment suggests that serious crime occurs?"

These exploratory items, and pilot testing in general, helped to control for possible confounds by considering additional cues in the environment with potential to influence judgments about behavior occurring within them (i.e., individual-level symbolic associations with urban or natural environments). In particular, trained research assistants viewed and coded participants' responses which described the type of person who might be found in the environment and their lists of five descriptors of the environment. The most frequently occurring words were highlighted, and the frequency in which these words were used across all participants was counted, which acted to quantify the open-ended responses and indicate which backgrounds were being most frequently associated with words related to crime and disorder. For example, backgrounds with associated words such as "dirty," "run-down," or "scary" were considered for use as a disordered background, while backgrounds with associated words such as "clean," "orderly," or "well-kept" were considered for use as an ordered background. When choosing backgrounds for the primary study, I also considered the type of environment that was included among the disordered and non-disordered environments, so that backgrounds were comparable on type of environment (urban, suburban, natural, etc.), type of structure (industrial, housing), and location of environment.

Using the overall means of disorder as primary criteria, while also taking into consideration participants' open-ended responses and the need to balance the types of environment portrayed, eight backgrounds (four disordered, four ordered) were chosen for the primary study. The final backgrounds included four industrial areas, two housing areas, and two natural areas with visible green space.

Primary Experiment

To test the hypothesis that visually perceived disorder affects viewers' judgments of the scene, I developed an experiment in which participants made judgments about a set of photos portraying police-citizen interactions. Each set of stimuli contained photos of police-citizen interactions occurring in an environment either with or without visible physical disorder, as well as a subset of neutral, distractor photos.

Method

Power Analyses. A power analysis calculated using G*Power (Erdfelder, Faul, & Buchner, 1996) determined that a sample size of $n = 54$ was required to reach an adequate level of power to detect a moderately-sized main effect of environment condition. I chose to gather a larger sample of participants in order to increase the chances of having greater racial diversity to examine viewers' self-identified race/ethnicity as a moderator in ancillary analyses.

Participants. A sample of undergraduate students ($n = 138$) was recruited through the University of Connecticut participant pool. Participants completed this study in-person for partial course credit. This sample included students from both a main, rural campus ($n = 128$) and from an urban, regional campus ($n = 10$). Fourteen participants were excluded from analyses if they failed one of two attention checks, and nineteen were excluded for indicating prior knowledge of the study. This resulted in a final sample of $n = 105$ (69 female, 19 male, 1 non-binary, 16 no response). Gender information was obtained from demographics reported to the participant pool. The self-identified racial identity breakdown of the sample can be found in Table 2.

Stimuli. Stimuli were created using GIMP (Version 2.10.6, 2018), an open-source graphics editor. Two sets of eight experimental stimuli were created, using eight backgrounds chosen from pilot-testing (see Appendix C). Each stimulus was created by superimposing a

police officer and a citizen (referred to as a "pair") onto one of eight backgrounds. Pairs were chosen using online photo search engines. To qualify for use in this study, the following controls were imposed when choosing pairs: both the police officer and citizen were male, perceivably light-skinned, and physically-touching.

Each of the eight police-citizen pairs were superimposed over one disordered background and one ordered background, creating sixteen stimuli in total. These sixteen stimuli were then separated into two sets of eight experimental stimuli, four with disordered backgrounds and four with ordered backgrounds. Participants were randomly assigned to view one set, which contained each pair and each background exactly one time. By creating two separate sets of stimuli, I varied which police-citizen pair appeared with a given environmental background, and could potentially rule out that environment condition effects on dependent measures were due to the particular pair who appeared in them.

In addition to the experimental stimuli, within each set were eight "neutral," distractor photos to control for the potential of participants becoming aware of the purpose of the study (see Appendix D). Distractor stimuli were created by choosing eight pairs and eight backgrounds through an internet photo search engine. In order to be consistent with the experimental stimuli, the pairs in distractor photos showed two perceivably light-skinned men, physically touching. To distract the participants' attention away from the purpose of the study as it relates to police-citizen interactions, some distractor pairs were chosen to include men in (non-police) uniform. Neutral pairs were also superimposed over "neutral" backgrounds. When creating the stimuli, I took consideration to ensure that the similarities between the experimental and neutral stimuli were minimal, with the neutral stimuli devoid of cues to physical disorder that were of interest in the experimental backgrounds. Neutral backgrounds were chosen and designed so that not only

were they devoid of visual cues of disorder such as graffiti, broken windows, etc., but also limited in their indication of ordered-ness. This was done by using settings such as a clear sky, an empty parking lot, etc., which would indicate neither order nor disorder, due to the lack of physical structures from which disorder or order could be ascertained. Both sets of stimuli shown to participants contained the same eight neutral stimuli.

Materials. The experiment was developed and conducted using Qualtrics Survey Software (Qualtrics, Provo, UT). Two sets of sixteen stimuli (eight experimental, eight neutral) were imported into Qualtrics for use in the experiment. Upon beginning the study, participants were randomly assigned via Qualtrics to view one of two sets of stimuli at equal proportion (after exclusions: Set A , $n = 52$; Set B, $n = 53$). Research assistants were blind to set condition. Within each set, participants viewed four blocks of four stimuli in random order (one disordered, one ordered, two neutral, presented randomly within the block) to create a more equally distributed presentation of experimental and neutral stimuli, and to control for viewing order and fatigue effects.

Procedure. Participants came to the laboratory and were guided through the study by an undergraduate research assistant. All participants completed the study in an individual cubicle room with a computer. Before beginning the experiment, participants read through an on-screen information sheet which gave them information about what they would be asked to do in the experiment, as well as information about their participation in research and where to go if they had questions. After reading through the information sheet and asking any questions they had, the research assistant began the study on the screen and left the room. Participants were then shown more specific instructions for the experiment: “On the following pages, you will see a variety of interactions between two people and will be asked to answer questions about their

relationship. Please do your best to answer honestly, and remember that your responses will be kept confidential."

Photos were shown in random order at the center of the screen with no time limit. Each photo was presented at a size of 800 x 600 pixels. While viewing each photo, participants were presented, one-at-a-time, with a series of thirteen response items located under each photo (see Appendix E). After responding to all thirteen items, participants moved onto the next photo. After viewing and responding to all sixteen photos, participants were asked to respond to four probe questions intended to determine whether participants were suspicious regarding the disorder hypothesis or if they had prior knowledge of the study's purpose. Lastly, participants completed a measure of identification with police and reported which race or ethnicity they self-identified as. Upon completing these measures, participants were then debriefed on-screen about the true purpose of the study, given the opportunity to ask the research assistant questions, and thanked for their participation.

***Dependent Measures*.** For each photo, participants responded to four items about their perception of aggression and threat in the interaction. Respondents were asked to indicate the extent to which they agree with the following statements, on a Likert scale of 1 (*Strongly Disagree*) to 7 (*Strongly Agree*): "The person on the *left* is behaving aggressively"; "The person on the *right* is behaving aggressively"; "The person on the *left* poses a threat to the person on the *right*"; and "The person on the *right* poses a threat to the person on the *left*". These items intentionally refer to the person on the left or the right instead of to the police or the citizen to avoid making the purpose of the study salient and to remain consistent with the neutral stimuli.

Additionally, participants responded to the following questions on a bipolar scale from 1 (*High likelihood of the person on the left*) to 7 (*High likelihood of the person on the right*): "How

likely is it that the person on the *left* or the person on the *right* initiated physical contact?"; and "How likely is it that the person on the *left* or the person on the *right* is in control of this situation?" Since the positioning of the police and the citizen was not constant in each stimulus, responses were recoded so that higher scores indicate that the police officer-initiated contact or is in control, and lower scores indicate that the citizen-initiated contact or is in control.

Lastly, participants reported their perceptions of the general affective tenor of the interaction by rating on a Likert-type scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*) the extent to which they agree that the interaction is "friendly" (reverse coded), "hostile," "pleasant" (reverse coded), "threatening," "intimidating," "respectful" (reverse coded), and "affectionate". Ratings on all items except "affectionate" were used to create a composite score of perceived negativity of the interaction. The affectionate rating was designed to be a filler item, to fit the ostensible purpose of the study, and it provided one rating that was especially apt for the neutral photos. The intraclass correlation coefficients (ICCs) for the final six ratings on each of the eight photos ranged from 0.622 to 0.787.

After responding to photo-specific items, participants were asked to respond to probe questions, intended to filter out participants who indicated some knowledge of the study's true purpose: "What was the purpose of this study?"; "Were you confused by anything this study asked you to do?"; "Do you have any questions about the purpose of the study?"; and "Did you know what the purpose of this study was before you participated in it? *(For example, from a friend who has previously participated.)*" The first three items were open-response, and the final item was responded to with "yes" or "no" (see Appendix F).

Lastly, participants were presented with a 7-item measure of their identification with police officers (Tyler & Fagan, 2008; Granot, Balcetis, Schneider, & Tyler, 2015). Participants

responded on a 7-point Likert-type scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*), to questions such as "If you talked to most police officers, you would find that they have similar views to your own on many issues," and "Your background is similar to that of most police officers" (see Appendix G). Respondents' mean identification with police ranged from 1.61 to 6.57 ($M = 4.71$, $SD = .968$), $\alpha = 0.790$. After completing the identification with police scale, respondents were shown a list of racial/ethnic groups and asked to indicate which of the groups they identified with, with no limit to how many racial groups they could choose to identify with (See Appendix H). Race breakdown of the sample by set can be found in Table 2.

Results

First, I tested Hypothesis 1, that the presence of physical disorder in an environment would affect perceived negativity of the interaction, using six-item composite scores of viewers' judgments of an interaction as friendly, hostile, pleasant, intimidating, threatening, and respectful. Cronbach's alpha for the six items was deemed adequate ($\alpha = .934$). Composite scores were created by reverse-coding the three positive items (friendly, pleasant, respectful) and calculating the mean of each individual's responses to the six items. Negativity scores in each of the environment conditions, disordered and ordered, were calculated as the average of the composite scores for the four photos in that condition. A 2 x 2 analysis of variance (ANOVA) was conducted on the mean composite score of perceived negativity of the interaction, with a within-subjects factor of environment condition (disorder, order) and a between-subjects factor of set (A or B). There was no main effect of environment condition found on overall perceptions of negativity, $F < 1$, and no main effect of set, $F(1,103) = 3.36$, $p = 0.07$. However, there was an interaction between condition and set, $F(1,103) = 25.69$, $p < .001$, $\eta^2 = 0.20$. Mean negativity ratings for Set A and Set B demonstrated contrasting patterns by environment condition. In Set

A, disordered photos were rated more negatively (M = 5.46, SD = 0.62) than ordered photos (M = 5.24, SD = 0.65). Unexpectedly, the effects of environmental condition were in the opposite direction in Set B (Disorder: M = 5.03, SD = 0.71; Order: M = 5.21, SD = 0.66). Pairwise (LSD) comparisons of the condition means within set revealed that both comparisons were significant, ps < 0.001.

Given the unexpected interaction between environment condition and set, post-hoc analyses of the environment effects at the level of each pair of disorder-order photos were conducted. This was essential because the same four male dyads that were depicted in the *disordered* condition in Set A were used in the *ordered* condition for Set B (see Table 3, top four photos), and the opposite was true for the subset of four other male dyads depicted in the sets (see Table 3, bottom four photos). Differences involving the four *dyads* in these subsets could therefore obscure overall effects of environment within set. Thus, one-way ANOVAs were conducted for each of the eight photo pairs, with a between-subjects factor of environment condition. Environment condition had a significant effect on negativity for one photo pair, depicted as Pair 1 in Table 3, $F(1,103) = 6.09$, $p = 0.02$. As the means in Table 3 indicate, the disordered photo was rated more negatively than the ordered photo. Environmental condition had no effect on any other photo pairs; see Table 4 for all F statistics for negativity judgments.

Judgments of Aggression and Threat

Hypotheses 2 and 3 focused specifically on key judgments most relevant to inferences related to Broken Windows Theory, namely judgments of how aggressive and threatening the individuals in the interactions were. Individuals' average rating of the 4 photos within each environment condition were analyzed in 2 x 2 x 2 ANOVAs with two within-subjects factors of

target (police, citizen) and environment condition (disordered, ordered), and a between-subjects factor of set (A or B).

To measure judgments of aggression, responses to two items referring to the aggression of either the person on the left of the photo or the person on the right were used in this analysis. The predicted main effect of environment condition was not significant, $F < 1$. There was no evidence found for a main effect of set, $F < 1$, but there was a significant main effect of target on judgments of aggression, $F(1,103) = 34.19$, $p < .001$, $\eta^2 = 0.249$, such that citizens were judged as more aggressive ($M = 4.55$, $SD = 1.21$) than police ($M = 3.49$, $SD = 1.26$). This effect was not moderated by environment condition, $F < 1$. Again, there was an unexpected interaction of condition and set on the judgments of aggression, $F(1,103) = 55.10$, $p < .001$, $\eta^2 = 0.348$. As with negativity ratings, the effects of environmental condition were in the expected direction for Set A (disorder $M = 4.26$, $SD = 1.06$; ordered $M = 3.87$, $SD = 1.11$) and in the opposite direction in Set B (disordered $M = 3.80$, $SD = 1.37$; ordered $M = 4.17$, $SD = 1.40$). Target effects did not moderate this interaction, $F(1,103) = 1.11$, $p = 0.29$.

The same pattern was found in the ANOVA on threat ratings, except that there was no main effect of target, $F < 1$. Most critically, the predicted main effect of environmental condition was again non-significant, $F < 1$, and the same set by condition interaction was found, $F(1,103) = 9.36$, $p = 0.003$, $\eta^2 = 0.083$, with the same pattern of means for threat as aggression (Set A: *M*s = 4.19 and 4.07, *SDs* = 1.37 and 1.38; Set B: *Ms* = 4.02 and 4.16, *SD*s = 1.43 and 1.44; disorder and order, respectively). No other main effects or interactions had significant impact on threat judgments, *F*s < 1. Means for aggression and threat judgments by set and target are presented in Table 5.

As with negativity judgments, further post-hoc analyses were conducted to understand the interaction between environment condition and set on judgments of aggression and threat at the photo pair level. For each measure, 2 x 2 ANOVAs were conducted on ratings of each of the eight pairs of photos depicted in Table 7, with the between-subjects factor of environment condition and within-subjects factor of target.

As the reported *F*s in the left side of Table 6 show, environment condition had no effects on judgments of aggression at the pair level, but reliable target effects were found for all pairs, except for pairs 1 and 7. There were no interactions between environment condition and target on ratings of aggression for any of the eight pairs. Figures 1 and 2 show the relationship between target and aggression is consistent for each of the eight pairs and for both sets. Means of aggression judgments for each photo pair by target, environment condition, and set can be found in Table 7.

The *F*s on the right side of Table 6 also indicate that environment condition did not affect judgments of threat at the photo pair level. No reliable target effects were found, except for in pairs 3 and 8, where both citizens were rated as more threatening towards the police officers than vice versa (pair 3, citizen $M = 5.62$, $SD = 1.24$, police $M = 3.74$, $SD = 1.61$; pair 8, citizen $M = 4.81$, $SD = 1.51$, police $M = 4.28$, $SD = 1.79$). There were no interactions between environment condition and target on judgments of threat for any of the eight pairs.

Ancillary Judgments

In addition to testing the three primary hypotheses, two additional hypotheses were tested to examine additional behaviors relevant to police-citizen interactions that might also be affected by the presence of environmental disorder.

Hypothesis 4 predicted that the presence of physical disorder would affect judgments of who in the interaction initiated physical contact ("person on the left" or "person on the right"). Items were rescored such that higher scores refer to a higher likelihood of the police officer initiating physical contact, while lower scores refer to a higher likelihood of the citizen initiating physical contact. A 2 x 2 ANOVA was conducted on viewers' mean judgments of who was most likely to have initiated physical contact with a within-subjects factor of environment condition and a between-subjects factor of set. I found no evidence of a main effect of environment condition on overall perceptions of who in the interaction initiated physical contact, nor a main effect of set, *F*s < 1. Again, there was an interaction between environmental condition and set, $F(1,103) = 8.97$, $p = .003$, $\eta^2 = 0.08$. Set A disordered photos had a mean of $M = 4.80$, $SD = 1.46$, while ordered photos had a mean of $M = 4.99$, $SD = 1.51$, and Set B disordered photos had a mean of $M = 5.15$, $SD = 1.18$, while ordered photos had a mean of $M = 4.92$, $SD = 1.33$. Participants who saw Set A photos reported a lower likelihood of police initiating contact in disordered photos and higher likelihood of police initiating contact in ordered photos, while participants in Set B reported the opposite.

Further analyses were conducted to understand the interaction between environment condition and set on judgments of who initiated physical contact. One-way ANOVAs were conducted on scores for each of the eight police-citizen pairs, with a between-subject factor of environment condition. Environment condition was not found to have an effect on any judgments of who initiated physical contact at the pair level, *Fs* < 1.00.

Lastly, I tested Hypothesis 5 that the presence of physical disorder would affect judgments of who in the interaction had control in the situation ("person on the left" or "person on the right"). Responses to items were recoded such that higher scores refer to a higher

likelihood of the police officer having control, while lower scores refer to a higher likelihood of the citizen having control. A 2 x 2 ANOVA was conducted on viewers' judgments of who was in control of the situation with a within-subjects factor of environment condition and a between-subjects factor of set. The main effect of environment condition on judgments of who was in control in the situation was not statistically significant, $F(1,103) = 3.59$, $p = 0.06$. Moreover, there were no other main or interaction effects on judgments of control, Fs < 1.

Race and Police Identification Analyses

Racial Identity Analyses. One set of secondary predictions involved whether participants' self-identified racial identities would moderate the impact of environmental condition on judgments of police-citizen interactions. Unfortunately, the sample had limited diversity in racial self-identity (see Table 2 for race breakdown of the sample). However, two groups had sufficient numbers to explore differences for these groups: White (n = 49) and Asian (n = 27). Participant data was included in these analyses if they indicated that they self-identified as either White or Asian, all other reported racial groups were omitted from these analyses. Analyses were conducted for the key three dependent measures: judgments of negativity, aggression, and threat. The general hypotheses for these analyses were that judgments of police-citizen interactions would differ as a function of perceivers' self-identified racial identity, and that race might moderate effects of any environmental condition main or interactive effects that occur.

First, a 2 x 2 x 2 ANOVA was conducted on the measure of negativity, with a within-subjects factor of environment condition and between-subjects factors of set and race (White or Asian). I found no evidence of a main effect of environment condition on ratings of negativity, F < 1. There were also no main effects of set or race found, Fs < 1.00. Replicating the primary

analyses, there was an interaction between environment condition and set, $F(1,72) = 16.29$, $p < .001$, $\eta^2 = 0.184$. The set by race interaction on judgments of negativity did not achieve conventional levels of statistical significance, $F(1,72) = 3.57$, $p = 0.06$. Both the environment condition by race interaction, and the 3-way interaction between environment condition, set, and race were non-significant, Fs < 2.26, ps > 0.13.

Second, a 2 x 2 x 2 x 2 ANOVA was conducted on judgments of aggression, with within-subjects factors of environment condition and target, and between-subjects factors of set and race. There was no main effect of environment condition found on judgments of aggression. As with primary analyses, there was a main effect of target, $F(1,72) = 22.00$, $p < 0.001$, $\eta^2 = 0.234$. There were no main effects of set or race on judgments of aggression, Fs < 1. There was a significant interaction between target and race, $F(1,72) = 3.96$, $p = 0.05$, $\eta^2 = 0.052$. Both White and Asian participants reported higher means of aggression for citizens than police, however the effect of target was slightly larger for White participants than for Asian participants (White, police $M = 3.27$, $SD = 0.18$; citizen $M = 4.82$, $SD = 0.18$; Asian, police $M = 3.67$, $SD = 0.24$, citizen $M = 4.29$, $SD = 0.24$). The interaction between environment condition and set was again significant, $F(1,72) = 42.69$, $p < 0.001$, $\eta^2 = 0.372$. Two-way interactions between target and set, environment and target, and set and race were all non-significant. There was a significant three-way interaction between environment, set, and race, $F(1,72) = 6.53$, $p = 0.01$, $\eta^2 = 0.083$. The pattern of this interaction showed that the environment by set interaction, found repeatedly in the full sample, held for White participants but was weaker for Asian participants.[1] All other three-

[1] Set A: White, disorder: $M = 4.35$, $SD = 0.19$; White, order: $M = 4.10$, $SD = 0.18$; Asian, disorder: $M = 4.18$, $SD = 0.26$; Asian, order: $M = 4.03$, $SD = 0.26$. Set B: White, disorder: $M = 3.88$, $SD = 0.17$; White, order: $M = 4.05$, $SD = 0.17$; Asian, disorder: 4.06, $SD = 0.22$; Asian, order: $M = 4.21$, $SD = 0.22$.

way interactions were non-significant, and the four-way interaction between environment condition, target, set, and race was non-significant.

Lastly, 2 x 2 x 2 x 2 ANOVA was conducted on judgments of threat, with within-subjects factors of environment condition and target, and between-subjects factors of set and race. As with the larger sample, there were no main effects of environment condition, target, or set, and there was no main effect of race found on judgments of threat. The interaction between environment condition and set was again significant, $F(1,72) = 11.58$, $p = 0.001$, $\eta^2 = 0.139$. Like with judgments of aggression, there was an interaction between target and race, $F(1,72) = 3.96$, $p = 0.05$, $\eta^2 = 0.052$. With a similar pattern to judgments of aggression, White participants reported a mean judgment of threat that was higher for citizens towards police than vice versa (police $M = 3.74$, $SD = 0.21$; citizen $M = 4.45$, $SD = 0.19$). However, Asian participants showed the opposite effect, reporting a higher mean threat from police towards citizens than vice versa (police $M = 4.30$, $SD = 0.29$; citizen $M = 3.94$, $SD = 0.26$). No other effects involving race were significant.

Police Identification Analyses. The second set of predictions regarding effects of viewer identity involved whether viewers' self-reported identification with police might interact with their judgments. Thus, ANCOVAs on each of the three key dependent variables of negativity, aggression, and threat, examined these hypotheses, including participants' mean identification with police as a covariate. Mean identification with police was calculated by averaging participants' individual responses to the 7-item measure of identification with police (Tyler & Fagan, 2008; Granot et al., 2014; see Appendix G). Mean identification with police ranged from 1.61 to 6.57 ($M = 4.71$, $SD = .97$), $\alpha = 0.790$. Participants' mean identification with police officers was not shown to covary on any of the three judgment measures, Fs$(1,102) < 3.00$, ps >

0.08. Tests of whether the covariates interacted with any factors included in the ANCOVAs also revealed no significant interactions involving the covariate.

Discussion

The purpose of this study was to explore whether the physical environment in which an interaction is embedded contributes to discrepant judgments about the interaction. I found no evidence that viewers of police-citizen interactions were using disorder cues in the environment to inform their judgments about the interaction, as demonstrated by the lack of found effects of environment on any of the five dependent measures of negativity, aggression, threat, physical contact, or control.

An explanation for this null effect of environment could be drawn from an ecological perspective. McArthur and Baron (1983) argue that the ecological position of social perception assumes perception is adaptive, that dynamic events specify opportunities for action in an environment, and that the perception of these opportunities relies on the perceivers' *attunement* to what actions the environment affords the actors. Assuming this position, in order for viewers of police-citizen interactions to make differential judgments according to the environment, they would have to be attuned to the different opportunities for action that each environment affords the actors. Affordance attunement results from perceptual learning, prior experience with a particular environment which allows the perceiver to attend to the opportunities for action within (McArthur & Baron, 1983). While I did not measure this sample's familiarity or prior experience with the shown environments, one possible explanation for the null effect of environment is that the viewers in this particular sample are not familiar with, and therefore are not attuned to the opportunities for action in, disordered environments. If viewers are not attuned to how a disordered environment might afford different actions than an ordered environment, then there

would be no reason to expect differences in any of the measured judgments. Future studies will consider populations with stated familiarity with disordered environments to determine if an ecological perspective is appropriate to explain differences in judgments as a function of environment perception.

I did find a reliable effect of target on one actor-specific dependent measure. Regardless of the effect of environment or photo set, viewers judged the citizen as more aggressive than the police officer (see Table 7 for a comparison of photos by pair). These results suggest that throughout their judgment-making processes, viewers of police-citizen altercations may be bringing with them preconceived notions about the aggression of actors in the altercation. The effect of target on perceived aggression was further confirmed at the level of the police-citizen pair. Table 6 shows the effect of target remained consistent in six out of eight pairs, meaning that respondents were consistently rating the citizen as more aggressive than the police officer, regardless of which environment condition the photo was portraying and which police-citizen pair they were making judgments about.

The unexpected interaction between set and environment condition, which was found for the dependent measures of negativity, aggression, threat, and physical contact, may be due to judgments about the pairs of police and citizens themselves, rather than any kind of difference by environment condition dependent on which set participants saw. Each set was created using the same eight pairs of police and citizens, with four of the pairs embedded in a disordered environment in one set, and the same four pairs embedded in an ordered environment in the other set. The pattern of means on each of these dependent variables suggests that by coincidence, interactions between odd-numbered pairs (which were embedded in disordered environments in Set A and ordered environments in Set B) were rated as more negative, aggressive and

threatening than interactions between even-numbered pairs (see Notes on Tables 3 and 7). This interaction could have likely been avoided if, in addition to pilot testing backgrounds prior to creating stimuli, judgments about each pair with no background included were also measured before their inclusion in the study. If I use a similar paradigm in future studies, I will first gather information about judgments of each pair on their own, in order to counterbalance these pairs by set, controlling for the potential for viewers to perceive certain interactions between pairs as inherently more aggressive, threatening, or negative.

One police-citizen dyad in particular may have contributed to the unexpected interactions between environment condition and set: Pair 3. As the means in Table 7 show, the citizen in this pair was judged as much more aggressive than other citizens, and this pair was one of two which showed reliable target effects on judgments of threat, where the citizen was judged as posing more of a threat to the police officer than vice versa. These findings suggest that there may be additional information viewers are picking up from this pair, allowing for more extreme judgments of aggression and threat in the interaction. Research and anecdotal evidence suggest a potential "hoodie effect," where people wearing a hooded sweatshirt are stereotyped and perceived as dangerous or suspicious (Keene & Handrich, 2012). Recent research has even found that when a sample of university students were given a police uniform to wear, they exhibited an attentional bias towards hoodie-wearers, demonstrated through slower reaction times during a shape categorization task when photos of hoodie-wearing individuals acted as distractors in the visual field (Civile & Obhi, 2017). Perhaps, when participants are put in a position to pass judgment on others, they draw upon culturally held stereotypes about who wears what in order to form these judgments. Future research will account for the potential of viewers' stereotypes about clothing to interact with their judgments about police-citizen interactions.

The limitations of these findings primarily lie within the sample. Judgments about both potentially criminal behavior and the implications of physical disorder in an environment have repeatedly been shown to rely on factors such race, age, familiarity with the environment, past exposure to crime, fear of crime, among others. Not only was this sample taken exclusively from a population of university students, but most of these individual difference measures were not included or considered in this study. While there was no evidence to support my primary hypothesis that viewers of police-citizen interactions use disorder cues in the environment to inform their judgments about the interactions, it is possible that the non-effect of environmental disorder is specific to this particular sample of participants. While this sample of university students may not be extracting reliable or measurable information about disorder in the environment when making judgments about the negativity, aggression, threat, initiation of physical contact, and control of police-citizen interactions that occurs within, further studies will explore whether this is the case in different populations.

I found some evidence that judgments about police-citizen interactions may differ according to the viewers' self-identified racial identity. While I was only able to compare Asian and White participants, there was an interaction effect between target and race on judgments of threat, where Asian participants judged police officers as posing more of a threat to citizens than the citizens to police. There were no initial predictions about the differences in judgments between White and Asian participants, though this difference will be explored more in-depth in future studies to understand the cause of these differential judgments.

An additional limitation of this study is that it relied on the essentialist view of Broken Windows Theory, which assumes to some degree that the perception and symbolic association between disorder and crime is something that is universally understood by most, if not all, its

perceivers. I conducted this study under the assumption that a sample from a university population (the same population in which the pilot study was conducted to develop the stimuli) would be consistent in their associations with disorder and crime and that this study would find an effect of disorder if there was one to be found. However, taking the essentialist view of the disorder-crime relationship does not adequately account for social and individual differences in disorder perception, including differences according to race, age, gender, fear of crime, as well as exposure to, and familiarity with similar environments. Future research will look at these factors more closely, as I believe that with more careful consideration of individual factors and a more diverse sample, there may be differences in how physical disorder present in the environment affects subsequent judgments.

Lastly, this study also assumed the pathway which was proposed in the original Broken Windows Theory and was implemented in policing strategies which drew from this theory, that visually perceived environmental disorder leads to fear of crime and actual criminal behavior. This pathway assumes that the presence of disorder is a direct cause of crime, fear of crime, and perceptions of diminishing social control, however Robinson, Lawton, Taylor, and Perkins (2003) found evidence that this pathway is not entirely representative of how disorder perception relates to fear of crime and other perceptions. There is some limited, cross-sectional evidence for the original pathway that the perception of incivilities (physical and social disorder) occur prior to fear of crime; the presence of incivilities has been found to predict risk perceptions, which in turn predicts fear of crime (LaGrange, Ferraro, & Supancic, 1992; Perkins & Taylor, 1996; Wyant, 2008). However, Link et al (2017) used a longitudinal method to reverse this traditional pathway, showing that individual risk perceptions can occur well-before the perception of incivilities and can predict disorder perception much more consistently than the inverse pathway

(Link, Kelly, Pitts, Waltman-Spreha, & Taylor, 2017). They found that community members who reported higher risk perceptions were more likely to see local deterioration emerging at a later time. The findings of Link et al. may shed some light on the non-effect in the current study, given that I did not measure participants' fear of crime as a pre-existing, individual difference measure. The consistency in which fear of crime is related to perceptions of disorder suggests that viewers' own fear of crime may relate to judgments about interactions that occur within a physically disordered environment, and future research will prioritize the testing of this pathway to determine its effect on judgments of police-citizen interactions.

Conclusion

While the presence of disorder was not found to have any effect on judgments of police-citizen interactions, this study shed light on differential interpretations of certain aspects of these interactions, specifically how viewers' judgments about potentially criminal behavior might be biased by expectations about how police officers and citizens interact with each other. These findings highlight a potential source of bias within judgments about visual evidence of police-citizen interactions, specifically the demonstrated difference between judgments about either actor. While this sample of participants did not seem to consider disorder in the environment, or lack thereof, to come to conclusions about police-citizen behavior, they still showed consistent patterns in their judgments about this visual evidence.

This study provides some preliminary evidence for the perspective of social vision, given that while this sample consistently judged citizens as more aggressive than police, this pattern of judgment may not be universal, particularly in populations where there is a history of police-initiated violence in the community, or where there are differences in how communities understand the dynamic between police officers and citizens. There was evidence that this found

pattern may reverse in certain instances, given that Asian participants judged police officers as posing more of a threat to the citizen, than the citizen to the police, the only instance in this sample of any of the measured negative behaviors being attributed to the police rather than the citizen. Future research will sample from more diverse populations to understand how these patterns of judgment might differ according to a social group's history with police officers and their expectations about how these interactions should pan out.

In conclusion, viewers of photo evidence of police-citizen interactions seem to make consistent judgments about the behavior of either actor in the scene, regardless of the presence or absence of physical disorder in the environment. Given the proliferation of access to visual evidence for use in criminal trials, this study suggests that this evidence might not be the end-all, be-all solution to biased judgments of potentially criminal behavior, despite sometimes being touted as a source of truly objective information. If juries come to the table with their mind already partially made up about who behaved in a particular way in a police-citizen altercation, regardless of varying information in the scene, is the process by which the justice system relies entirely just? The finding that, with limited information about a police-citizen interaction and only a photo by which to base their judgments, viewers consistently judged a citizen as more aggressive than a police officer, should be taken into account when considering the perceived impartiality of judgments about criminal behavior.

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Table 1

Mean Ratings and Key Correlations for Pilot Tested Backgrounds

Background	Disorder	Likelihood of Serious Crime	SC/Disorder *r*	Tidy	Organized
1	**6.60**	**5.28**	**.406***	**1.44**	**1.52**
2	6.16	4.52	.330	1.68	1.84
3	**6.08**	**5.08**	**.771****	**1.64**	**1.68**
4	5.96	5.20	.307	2.04	2.48
5	5.68	4.40	.407*	1.92	2.28
6	**5.44**	**4.48**	**.512****	**2.12**	**2.36**
7	**5.08**	**4.24**	**.686****	**2.96**	**2.88**
8	4.96	4.60	-.073	2.60	2.76
9	4.92	4.72	.505**	2.76	2.92
10	4.84	3.76	.510**	3.16	3.52
11	4.44	3.68	.489*	2.80	3.64
12	3.84	3.44	.282	3.88	3.96
13	**3.56**	**3.04**	**.331**	**3.88**	**3.96**
14	2.92	2.72	.669**	5.00	4.80
15	**2.16**	**2.72**	**.662****	**5.44**	**5.44**
16	2.08	2.36	.297	5.04	5.32
17	1.80	1.60	.437*	6.48	6.76
18	**1.72**	**2.16**	**.415***	**5.40**	**5.60**
19	**1.72**	**2.12**	**.577****	**6.00**	**6.44**
20	1.72	2.12	.686**	6.08	6.32
21	1.44	1.96	.711**	6.36	6.40

Note. Photos in bold were used in the primary experiment.

*Correlation significant at 0.05-level (two-tailed)
**Correlation significant at 0.01-level (two-tailed)

Table 2

Race Demographics of Primary Experiment Sample by Set

	Set			
	A		B	
	n	%	*n*	%
White	22	42.3	27	50.9
Hispanic/Latinx	10	19.2	2	3.8
Black	6	11.5	3	5.7
Asian	11	21.2	16	30.2
Other	1	1.9	0	0
Multi-ethnic	2	3.8	5	9.4
Total	52	100	53	100

Table 3

Means of Negativity by Environment Condition, Set, and Pair

Pair	Disordered Photos			Ordered Photos		
	Set			Set		
1*		A	5.43 (.754)	5.03 (.903)	B	
3		A	5.78 (.694)	5.69 (.772)	B	
5		A	5.32 (.943)	5.14 (.777)	B	
7		A	5.31 (.808)	5.00 (.855)	B	
2		B	4.93 (.963)	5.15 (.928)	A	
4		B	5.09 (.826)	5.27 (.858)	A	
6		B	5.00 (.835)	5.23 (.714)	A	
8		B	5.11 (.784)	5.30 (.666)	A	

Note. The average negativity ratings for the first four police-citizen dyads listed above were significantly higher (M = 5.30, SD = 0.84) than for the dyads used in the bottom four photos (M = 5.18, SD = 0.80), $t(104) = 4.728$, $p < 0.001$.

*Main effect of environment condition significant at 0.05-level (two-tailed)

Table 4

Post-Hoc ANOVAs for Negativity by Pair

Photo Pair	$F(1,103)$	p
1	*6.091*	*0.015*
2	1.481	0.226
3	0.465	0.497
4	1.176	0.281
5	1.133	0.290
6	2.38	0.126
7	3.535	0.063
8	1.729	0.191

Table 5

Means for Aggression and Threat by Set and Target

		Set			
		A		B	
DV	Target	Disordered	Ordered	Disordered	Ordered
Aggression	Police	3.77 (1.09)	3.29 (1.20)	3.26 (1.34)	3.65 (1.40)
	Citizen	4.75 (1.03)	4.45 (1.02)	4.33 (1.40)	4.68 (1.40)
Threat	Police	4.12 (1.46)	4.01 (1.47)	3.95 (1.44)	4.09 (1.43)
	Citizen	4.26 (1.25)	4.12 (1.28)	4.08 (1.42)	4.22 (1.44)

Table 6

Post-Hoc ANOVAs by Pair: Environment Condition, Target Effects on Aggression and Threat

Pair	Effect	Aggression		Threat	
		F(1,013)	*p*	*F*(1,103)	*p*
1	Environment	0.151	0.698	1.82	0.18
	Target	2.579	0.111	0.628	0.43
	Environment*Target	0.473	0.493	0.415	0.521
2	Environment	0.088	0.768	0.328	0.568
	Target	*12.559*	*0.001*	0.129	0.72
	Environment*Target	0.05	0.823	0.81	0.37
3	Environment	0.161	0.689	0.378	0.54
	Target	*76.173*	*< 0.001*	*4.445*	*0.037*
	Environment*Target	0.232	0.631	< 0.001	0.984
4	Environment	0.234	0.63	0.048	0.827
	Target	*21.245*	*< 0.001*	0.001	0.97
	Environment*Target	0.119	0.731	0.133	0.716
5	Environment	0.83	0.364	0.06	0.807
	Target	*34.664*	*< 0.001*	2.916	0.091
	Environment*Target	0.177	0.674	0.507	0.478
6	Environment	0.005	0.945	0.147	0.702
	Target	*11.811*	*0.001*	0.002	0.968
	Environment*Target	0.092	0.763	0.221	0.639
7	Environment	0.68	0.411	0.031	0.861
	Target	3.016	0.085	0.725	0.396
	Environment*Target	0.35	0.556	0.005	0.945
8	Environment	0.271	0.604	0.367	0.546
	Target	*76.215*	*< 0.001*	*4.71*	*0.032*
	Environment*Target	0.311	0.579	0.009	0.926

Table 7

Means of Aggression by Target, Environment Condition, Set, and Pair

	Disordered Photos				Ordered Photos			
			Target					
Pair		Set	Police	Citizen	Police	Citizen	Set	
1		A	4.04 (1.70)	4.25 (1.31)	3.79 (1.94)	4.32 (1.59)	B	
3*		A	3.65 (1.52)	5.63 (1.07)	3.83 (1.70)	5.60 (1.41)	B	
5*		A	3.46 (1.61)	4.94 (1.42)	3.38 (1.48)	4.66 (1.79)	B	
7		A	3.92 (1.44)	4.19 (1.56)	3.60 (1.75)	4.15 (1.80)	B	
2*		B	3.38 (1.58)	4.21 (1.86)	3.38 (1.50)	4.33 (1.77)	A	
4*		B	3.32 (1.57)	4.26 (1.67)	3.35 (1.51)	4.44 (1.50)	A	
6*		B	3.36 (1.58)	4.21 (1.65)	3.44 (1.70)	4.15 (1.51)	A	
8*		B	3.00 (1.59)	4.64 (1.70)	3.00 (1.53)	4.87 (1.14)	A	

Note. The average aggression ratings for the first four citizen-police dyads listed above were higher (M =4.22, SD = 1.23) than for the dyads used in the bottom four photos (M = 3.84, SD = 1.24). Paired t-tests confirmed significant differences in judged aggression between the top and bottom four photos for both police and citizens, $t(104) = 5.879$, $p < 0.001$, and $t(104) = 7.625$, $p < 0.001$.

*Main effect of target significant at 0.05-level (two-tailed)

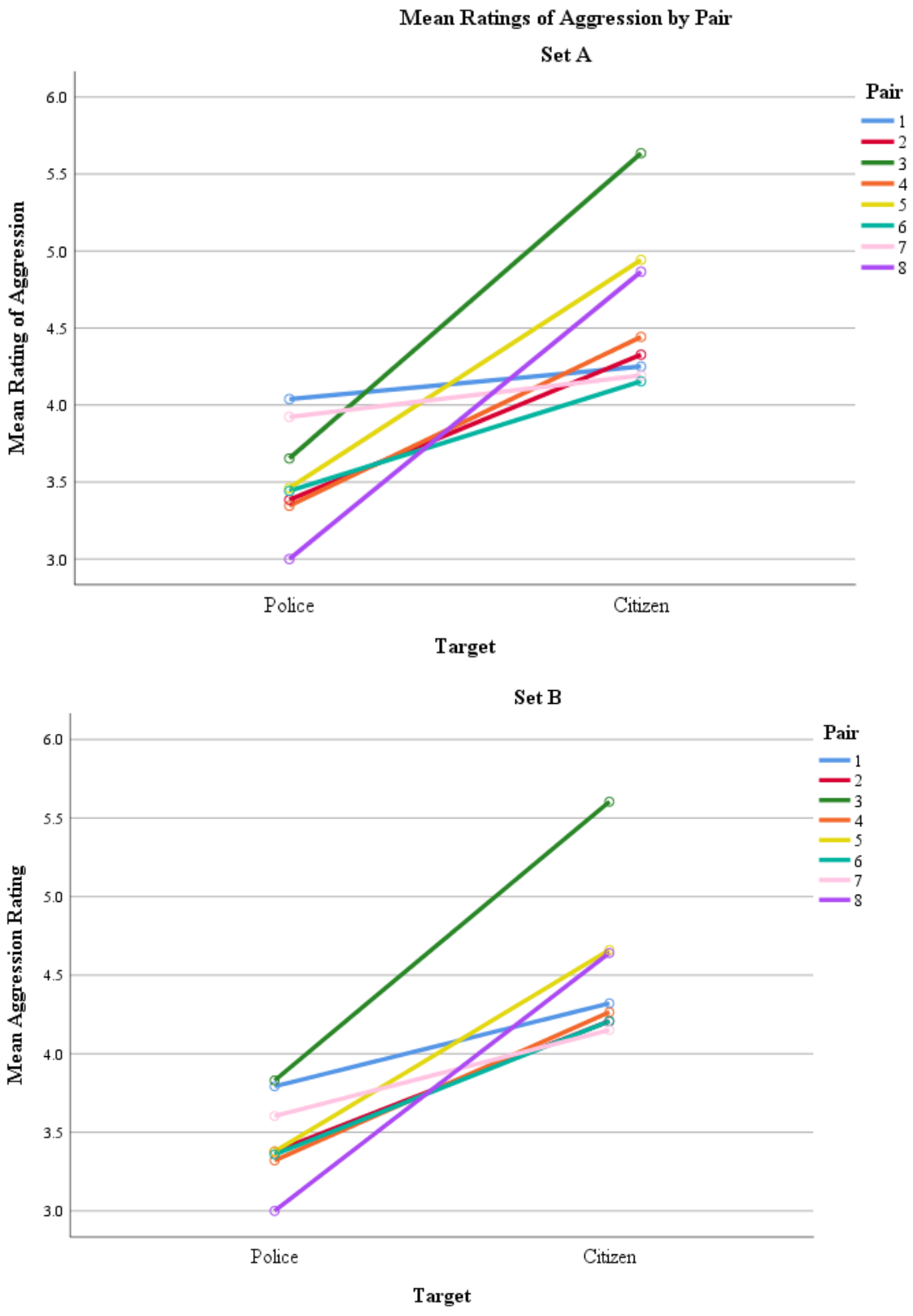

Figure 1: Mean aggression ratings by pair, target, and set (A: above, B: below).

Appendix A: Pilot-Tested Backgrounds

Appendix A (con't): Pilot-Tested Backgrounds

Appendix A (con't): Pilot-Tested Backgrounds

Appendix B: Pilot Test Measures

1. Is this type of environment familiar to you?
    a. (*Yes, No*)
2. Describe the kind of person you might find in this environment (living, hanging out).
    a. (*Free Response*)
3. List up to 5 words or phrases you would use to describe this environment to someone else.
    a. (*List response – Up to 5*)
4. How likely is it that serious crime occurs in this environment?
    a. (1-*Very Unlikely* to 7-*Very Likely*)
5. What about this environment suggests this? Be specific.
    a. (*Free Response*)
6. How *disorderly* is this environment?
    a. (1-*Very Orderly* to 7-*Very Disorderly*)
7. How *tidy* is this environment?
    a. (1-*Very Untidy* to 7-*Very Tidy*)
8. How *organized* is this environment?
    a. (1-*Very Unorganized* to 7-*Very Organized*)

Appendix C: Primary study experimental stimuli: Set A








Appendix C: Primary study experimental stimuli sets (con't): Set B








Appendix D: Neutral stimuli








Appendix E: Primary study measures

1. The person on the *left* was behaving aggressively.
    a. 1 *(Strongly Agree)* to 7 *(Strongly Disagree)*
2. The person on the *left* poses a threat to the person on the *right.*
    a. 1 *(Strongly Agree)* to 7 *(Strongly Disagree)*
3. The person on the *right* was behaving aggressively.
    a. 1 *(Strongly Agree)* to 7 *(Strongly Disagree)*
4. The person on the *right* poses a threat to the person on the *left*.
    a. 1 *(Strongly Agree)* to 7 *(Strongly Disagree)*
5. How likely is it that the person on the *left* or the person on the *right* **initiated physical contact?**
    a. 1 *(High likelihood of the person of the left*) to 7 (*High likelihood of the person on the right)*
    b. Coded before data analysis for higher scores to refer to police
6. How likely is it that the person on the *left* or the person on the *right* is **in control of the situation?**
    a. 1 *(High likelihood of the person of the left*) to 7 (*High likelihood of the person on the right)*
    b. Coded before data analysis for higher scores to refer to police
7. **Please indicate the extent to which you agree that this interaction is:**
    a. **Friendly**
    b. **Hostile**
    c. **Pleasant**
    d. **Affectionate (excluded from analyses)**
    e. **Intimidating**
    f. **Threatening**
    g. **Respectful**
        i. **1 *(Strongly Agree)* to 7 *(Strongly Disagree)***

1, 2, 3, 4, 7a-7g: recoded before data analysis: higher scores = stronger agreement
5,6: recoded before data analysis: higher scores = higher likelihood of police
7a-7g: α = .934

Appendix F: Probe Questions

You have completed Part 1 of the study. For Part 2, please respond to the following questions:

1. What was the purpose of this study?

2. Were you confused by anything the study asked you to do?

3. Do you have any questions about the purpose of the study?

4. Did you know what the purpose of this study was before you participated in it? *(For example, from a friend who has previously participated.)*

Appendix G: Identification with Police Scale (Tyler & Fagan, 2008; Granot, Balcetis, Schneider, & Tyler, 2015) ($\alpha = .790$)

Please indicate your agreement with the following statements about police officers. Remember that your responses will remain confidential.

1. If you talked to most police officers, you would find that they have similar views to your own on many issues.
2. Your background is similar to that of most police officers.
3. You can usually understand why police officers, in general, are acting a certain way in a particular situation.
4. You generally like most police officers that you encounter.
5. If most police officers knew you, they would respect your values.
6. Most police officers would approve of how you live your life.
7. Most police officers would value what you contribute to your community.

Appendix H: Racial Identity Question
Multiple Selection, respondents could mark as many groups as they chose.

Please indicate which of the following racial/ethnic groups you identify with.

1. White
2. Hispanic/Latinx
3. Black/African-American
4. Native Hawaiian/Pacific Islander
5. Asian
6. Middle Eastern/North African
7. Alaskan Native/Native American
8. Some other race, ethnicity, or origin